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ABSTRACT

The present study reports on exploratory research to determine whether the Aluminum Paragraph, a sentence-combining exercise developed by O'Donnell (Hunt, 1970) to measure the development of syntactic complexity in the writing of native speakers of English, can also serve as a measure of the active syntactic proficiency of learners of English as a second language. Performance by a group of learners of English as a second language is compared with available normative data for native speakers and with subscores made by the subjects on the Test of English as a Foreign Language (TOEFL). The low correlation between performance on the English Structure section of TOEFL and on the exercise, seems to indicate that recognition of correct grammatical structure is not always accompanied by proficiency in writing. A definitive judgment about the effectiveness of the rewriting exercise cannot be made. Appendices contain: a) the Aluminum Paragraph; b) a synopsis of performance on the exercise; and c) Spearman rank correlation coefficients of performance. (Author/AM)

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SENTENCE-COMBINING: A TECHNIQUE FOR ASSESSING PROFICIENCY IN A SECOND LANGUAGE*

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ABSTRACT

Many teachers of English as a second language preparing students to undertake academic coursework feel the need for some direct measure of their students' ability to produce syntactically mature prose. The present study reports on exploratory research to determine whether a sentence-combining exercise developed by O'Donnell (Hunt, 1970) to measure the development of syntactic complexity in the writing of native speakers of English, can also serve as a measure of the active syntactic proficiency of learners of English as a second language. Performance by a group of learners of English as a second language is compared with available normative data for native speakers and with subscores made by the subjects on the Test of English as a Foreign Language (TOEFL). Preliminary indications of the validity and limitations of the instrument are presented.

The research to be reported on in this paper attempts to determine the effectiveness of a rewriting exercise as a measure of the syntactic control which learners of English exhibit in their writing. The exercise in question thus seeks to evaluate a skill which has traditionally been measured by the written composition.

Though the written composition continues to be widely used to measure second language learners' written control of the target lang-

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* This paper was presented at the Conference on Perspectives on Language, University of Louisville, Louisville, Kentucky, May 6-8, 1976.

uage, it has in recent years been subjected to considerable re-evaluation. The arguments put forth both for and against it by now have wide circulation in the language teaching community. Two criticisms in particular are relevant to the present discussion. First, a written composition measures not one, but a whole range of linguistic and other skills, and the quality of a composition is only partially a function of the syntactic structures used by the writer. A syntactically immature composition---one in which the sentence structure is less complex than is considered acceptable for this form of communication---may be strong on a number of other counts. Conversely, the use of syntactically complex structures is clearly not sufficient for a composition to be judged favorably. Second, the composition which a student writes does not necessarily reflect his/her ability to write syntactically mature prose. Particularly in learning situations in which correctness is stressed above all else, many students will conscientiously avoid the use of complex sentence structures of which they may have nearly full control.

Among the prime responsibilities of the composition or grammar teacher, however, are the facilitation and evaluation of his/her students' syntactic development in the target language to the point that the students can express themselves in a form which approximates that used by native speakers of the language. Indirect measures of writing ability of the kind currently used on the Test of English as a Foreign Language (TOEFL) have at best only concurrent validity, and the relationship between a learner's ability to recognize what is syntactically correct and his/her ability to produce syntactically sophisticated and correct sentences is problematic. What is needed is an instrument which can more directly measure learners' ability to control the syntactic dimension

of successful, mature writing.

The instrument examined in the present study was developed by Dr. Roy C. O'Donnell (Hunt, 1970) to investigate the development of syntactic maturity in the writing of schoolchildren and adults. The exercise, known as the "Aluminum Paragraph," consists of 32 single-clause sentences of connected discourse. In general, the sentences are extremely short---shorter, in fact, than those normally spoken or written by children of kindergarten age.

Subjects are told to rewrite the passage in a better way by combining sentences, changing the order of words, and omitting words that are repeated too often. Subjects are cautioned not to leave out any information.

One great asset of this kind of exercise is that unlike what happens when students are given a free writing exercise, here everyone is saying the same thing. By "removing those variations in syntactic structure which might be due to differences in what two writers or groups of writers are saying, those other differences which are due only to the writer's syntactic maturity may be more clearly visible and measurable" (Hunt, 1970, p. 10).

The short sentences contained in the paragraph were chosen to give subjects abundant opportunities to use many of the sentence-combining transformations whose increased use has been shown by research (Hunt, 1965; O'Donnell, Griffin, and Norris, 1967) to be characteristic of mature writers. In the context of second language acquisition, the question is whether increased use of these sentence-combining transformations correlates with greater proficiency in the target language.

To illustrate the role of sentence-combining transformations in the writing of syntactically mature prose, we can refer to the paragraph it-

self, which is reproduced in Appendix A. For example, the first three sentences could be conflated by the generalized processes of relativization and clause reduction to "Aluminum, an abundant metal with many uses..." Further application of sentence-combining transforamtions might yield, instead of the five sentences which follow, "...comes from bauxite, a clay-like ore containing other substances as well." The resulting sentence---"Aluminum, an abundant metal with many uses, comes from bauxite, a clay-like ore containing other substances as well"---is an 18-word string which has been derived from eight separate sentences in the original paragraph. The new sentence is not the only way to combine the original eight, nor is it necessarily the best; but it is clearly more representative of mature expository prose than the string of short sentences from which it is derived. The point is that a second language learner's ability to produce syntactically mature prose depends at least in part on his/her ability to exploit the sentence-combining transformations available to him/her in the target language.

All of the transformations in the above example were optional in the sense that comprehension of the semantic and logical relationships involved did not depend on the application of these transformations. This is not the case, though, with the next example, which combines the subsequent three sentences. Sentence 9---"Workmen extract these other substances from the bauxite"---does not describe a process preceding what Sentences 10 and 11 describe, as the sequential nature of the original sentences might suggest. Rather, Sentences 10 and 11 begin to describe the actual procedure by which the action described in Sentence 9 is accomplished. Native speakers typically nominalize Sentences 10 and 11---for example, "Workmen extract these other substances from the bauxite

by grinding it and putting it in tanks." Less proficient learners of English will often fail to exploit this transformational process and thus do not clearly describe the logical relationship involved among the sentences.

The rewriting exercise was administered in December, 1975, to a total of 41 subjects. Sixteen were native speakers of English whose performance was used for normative purposes. Five were highly proficient nonnative speakers of English enrolled in graduate degree work at Indiana University; the remaining twenty were nonnative speakers of English enrolled in intensive English language improvement classes prior to or concurrent with academic coursework.

The performance of the subjects is summarized in Appendix B. The three variables used to measure performance were: (1) words per clause, (2) clauses per T-unit, and (3) words per T-unit (the third being the product of the first two). A T-unit is defined as "one main clause plus any subordinate clause or nonclausal structure that is attached to or embedded in it" (Hunt, 1970, p. 4). This measure of syntactic complexity is objective and easy to compute, and it has gained increasing recognition as a far more valid measure than the traditional index, sentence length.

The results indicate that the native speakers performed much as did the skilled adults in Hunt's 1970 study. While the native speakers in the present study (all of whom were graduate students at Indiana University) wrote slightly fewer words per clause, they used more subordinate clauses, and this accounted for their higher words per T-unit ratio. The five proficient nonnatives outperformed Hunt's average adults, and their performance indicates that they exploited the sentence-combining

transformations of English approximately, but not entirely, to the same extent as did their native-speaker peers. Not unexpectedly, the twenty nonnatives still enrolled in English language improvement classes performed far below adult native speaker norms; the syntactic complexity of their rewritten paragraphs was comparable to that of seventh grade age native speakers. It should be noted, however, that there was a wide range of performance among these twenty nonnatives. The lows on the three dependent variables were 4.59. 1.00, and 4.59, respectively; the highs were 8.57, 1.67, and 12.22.

The Spearman rank correlation coefficients computed for the twenty subjects enrolled in remedial English are presented in Appendix C. The most important implication arises from the low correlations between performance on the English Structure section of the TOEFL and the sentence-combining exercise. One can find here reinforcement for the notion that the ability to recognize correct grammatical structure in a language is not always accompanied by proficiency in writing. This is not to suggest that the ability to manipulate grammar is not a component of writing ability; on the contrary, the testing instrument under discussion here seeks to measure precisely that component. Clearly, though, active and passive skills in grammar do not necessarily go hand in hand (see O'Donnell, 1963; Zamel, 1976).

Judgment about the effectiveness of the rewriting exericse cannot be definitive at this point. Its performance as a testing instrument thus far argues in favor of continued research. Subsequent work, however, should be structured in such a way as to investigate the following problems:

(1) The original method for scoring rewritten paragraphs excluded from consideration sentences which were unintelligible or which included

information not in the original paragraph (Hunt, 1970, p. 13). Sentences which were only slightly defective structurally were presumably retained. This, at any rate, was the system employed in the present study. Some account, however, must be taken of structural errors which occur in rewriting, for they are as much an indication of incomplete syntactic control as is oversimplified sentence structure.

(2) Alternate rewriting paragraphs must be designed. That this is not an easy task was shown by the experience of Green (1969), whose attempt to devise a paragraph which would discriminate as well as the Aluminum Paragraph was largely unsuccessful.

There are indications from the present research that a sentence-combining rewriting exercise discriminates among learners of English at different levels of proficiency. How sensitive a measure it is, and the degree to which it correlates with free writing samples, are issues which demand---and would seem well worth---future investigation.

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APPENDIX A

THE ALUMINUM PARAGRAPH (HUNT, 1970, pp. 11-12)

DIRECTIONS: Read the passage all the way through. You will notice that the sentences are short and choppy. Study the passage, and then rewrite it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any of the information.

Aluminum is a metal. It is abundant. It has many uses. It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances. Workmen extract these other substances from the bauxite. They grind the bauxite. They put it in tanks. Pressure is in the tanks. The other substances form a mass. They remove the mass. They use filters. A liquid remains. They put it through several other processes. It finally yields a chemical. The chemical is powdery. It is white. The chemical is alumina. It is a mixture. It contains aluminum. It contains oxygen. Workmen separate the aluminum from the oxygen. They use electricity. They finally produce a metal. The metal is light. It has a luster. The luster is bright. The luster is silvery. This metal comes in many forms.

APPENDIX B

SYNOPSIS OF PERFORMANCE ON SENTENCE-COMBINING REWRITING EXERCISE

NS = NATIVE SPEAKERS (GRADUATE STUDENTS)

NNS 1 = PROFICIENT NONNATIVE SPEAKERS

NNS 2 = NONNATIVE SPEAKERS ENROLLED IN INTENSIVE ENGLISH CLASSES

VARIABLE	NS (N = 16)	NNS 1 (N = 5)	NNS 2 (N = 20)
WORDS/CLAUSE	9.66	8.52	6.25 (s = .999)*
CLAUSES/T-UNIT	1.75	1.66	1.27 (s = .213)
WORDS/T-UNIT	16.72	14.12	7.96 (s = 2.220)

* STANDARD DEVIATIONS ARE FOR NNS 2 GROUP ONLY.

COMPARATIVE DATA: SCORES FOR SCHOOLCHILDREN AND ADULTS FROM HUNT (1970)

VARIABLE	G4	G6	G8	G10	G12	AVERAGE ADULTS	SKILLED ADULTS
WORDS/CLAUSE	5.19	5.76	6.79	7.35	7.85	8.40	9.95
CLAUSES/T-UNIT	1.04	1.18	1.43	1.42	1.44	1.47	1.51
WORDS/T-UNIT	5.42	6.84	9.84	10.44	11.30	11.85	14.78

APPENDIX C

SPEARMAN RANK CORELATION COEFFICIENTS OF PERFORMANCE BY STUDENTS ENROLLED IN REMEDIAL ENGLISH CLASSES (N = 20)

(1) = TOEFL TOTAL

(2) = TOEFL SUBSCORE: PT. II - ENGLISH STRUCTURE

(3) = TOEFL SUBSCORE: PT. V - WRITING ABILITY

(4) = REWRITING EXERCISE: WORDS/CLAUSE

(5) = REWRITING EXERCISE: CLAUSES/T-UNIT

(6) = REWRITING EXERCISE: WORDS/T-UNIT

	(2)	(3)	(4)	(5)	(6)	
(1)	.73	.71	.23	.55	.48	(1)
(2)		.36	.01	.32	.20	(2)
(3)			.49	.52	.57	(3)
(4)				.54	.81	(4)
(5)					.89	(5)